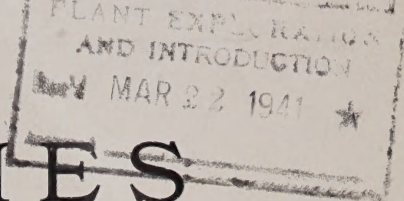


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Bertrand H. Farr
1941



DAYLILIES

Hemerocallis

1941 INTRODUCTIONS

COLOR PATTERNS

BY A. B. STOUT



Two articles reprinted from the Journal of The New York Botanical Garden,
January and February 1941.

Introductions Of Daylilies In 1941

By A. B. Stout

TWENTY CLONES of daylilies which have been developed at the New York Botanical Garden are here given horticultural names and described in print for the first time.

All of these are seedlings of hybrid origin and many have a complex ancestry that includes several species and also several generations of selective breeding after the hybridization. In the descriptions of the coloring, references are made to "Color Standards and Color Nomenclature" by Ridgeway, to the first volume of the "Horticultural Color Chart" recently published by the Royal Horticultural Society, and to the plate of colors in the "Garden Dictionary" edited by Norman Taylor and published by Houghton Mifflin and Co. Some reference is here made to color patterns; it is planned to present in a later issue of the Journal a survey of the principal classes of color patterns in flowers of daylilies.

It has already been reported to the readers of this Journal (February 1931, page 32) that the New York Botanical Garden does not propagate the daylilies either for sale or general distribution. This is done by the Farr Nursery Co. All of the clones here described have been under observation and critical evaluation during several years of propagation in the nursery of this company, whose records on evaluations, on vigor and

hardiness, and on other important characteristics of these selections have been considered in deciding on introductions and in formulating the descriptions here presented.

In connection with the research on the genus *Hemerocallis* at the New York Botanical Garden, which began in 1912, a total of about 70,000 pedigreed seedlings have been grown. Some 500 of these have been selected for future breeding and for critical evaluation in respect to their value for cultivation in gardens. Beginning in 1930 and previous to the present publication, 28 different new horticultural clones and one species (*Hemerocallis multiflora*) have been distributed to the trade. The present list of introductions adds several rather distinctly new types. In at least one rather important horticultural feature, each of these clones is different from any other introduction.

In the daylilies, selective breeding following hybridization has been especially effective in developing distinctly new clones in which certain characters are much modified or even new in expression.

As a rule, in *Hemerocallis* in the first generation hybrids of species crosses there is some degree of dominance and recessiveness or there is an intermediate expression for each pair of the contrasted characters of the parents. But differences in the behavior of several different contrasted characters are responsible for hybrids that are quite distinct from either of the parents. This condition becomes more complex when there are multiple-hybrid differences and especially when three or more species are involved in an ancestry.

But in these daylilies there are numerous cases of rather distinctly new expressions or modifications of character, and of these several classes are to be recognized:—

1. The modification may be an expression that is intermediate for the contrasted characters of the two parents. When this involves the interaction of a particular pair of hereditary units (alleles) in heterozygous condition the next generation shows simple segregations and the new character "does not breed true."

2. Many cases of differences are due to developmental interferences in expression. For example, the "twisted petal" character appears somewhat different with a narrow petal than with a broad petal.

3. In more complicated cases the hereditary factors carried by two or more non-homologous chromosomes are involved in complementary and modifying reactions. Selective breeding after hybridization is especially effective in such cases. It provides for increased complexity in the complement of chromosomes; it develops greater homozygosity when this increases the intensity of expression; it accumulates hereditary genes that have mutated; and it continues new associations of genes that may result from cross-overs or other rearrangements within chromosomes.

An example of this is the intensification of red pigments which gave the first plants with flowers that are dark mahogany-red. First there were hybridizations which involved yellow-flowered species and species that had fulvous flowers. The F_1 generation had pale fulvous flowers and none of the F_2 that were obtained had flowers that were darker than the more fulvous plant. Then plants that showed the greatest degrees of anthocyanin pigmentation were used as parents in further breeding and back-crossing. In the fifth generation seedlings were obtained whose flowers had degrees of dark red pigmentation not seen hitherto in any daylily. The various complementary factors which interact in these daylilies to intensify anthocyanin

MEMORANDUM CONCERNING NEW STOUT HYBRID DAYLILIES - 1/10/41

The status of the scarcer Stout Daylily Hybrids and especially the TWENTY NEW published in the Journal of the New York Botanical Gardens, January 1941, is as follows; i.e., orders are being booked for shipment as specified, until further notice and as the supply permits.

<u>SPRING '41</u> <u>SHIPMENT</u>	<u>SUMMER '41</u> <u>SHIPMENT</u>	<u>1942-43 ?</u> <u>SHIPMENT</u>
Autumn Prince	Afterglow	Charmaine
Baronet	Aladdin	Saturn
Brunette	Bertrand H. Farr	Taruga
Buckeye	Bicolor	Wolof
Dominion	Festival	
Harlequin	Majestic	
Hiawatha	Mignon	
Sachem	Monarch	
Yeldrin	Port	
	Princess	
	Red Bird	
	Rosalind	
	Symphony	
	Theron	
	Triumph	
	Vulcan	
	Zouave	

We will be glad to book reservation orders for shipment according to the above schedule at the introductory price fixed for Dr. Stout's Hybrids - \$3.00 per plant.

Reservation orders will be filled in THE ORDER OF THEIR RECEIPT, whenever and as long as the supply permits shipments. Reservations must be accompanied by remittance and will be acknowledged promptly.

FARR NURSERY COMPANY, WEISER PARK, PA.



GROWTH HABITS
OF THREE OF THE
NEW DAYLILIES

- 9 (Left above):
Hiawatha.
10 (Right above):
Bicolor.
11 (Right below):
Buckeye.

The two upper plants
both stand about 40
inches high; Buckeye
about 30 inches.



pigmentation in the flowers were brought together by hybridization and selective breeding into relations which produced a type of flower that had hitherto not been in existence. Several of the more deeply red-colored clones of the present introductions have a similar origin and for others there has been selective breeding for other shades in red.

In the daylilies any individual of unusual character or special merit for garden culture is propagated or multiplied by vegetative divisions to give a clone all members of which are merely branches of the one original seedling. In nearly all cases the clones of hybrid origin do not breed true from seeds.

Afterglow Daylily. The flowers of this daylily are of medium-large size and they have a most unusual coloring for day-lilies. The general tone is near capucine yellow: a sort of pale buff and pastel shade which extends well into the throat, where there is a delicate but definite rosy or pink tint which is slightly more pronounced along the midvein of the petals. The scapes rise to a height of 44 inches, and there are as many as 15 flowers in the two or three flowering branches that form an inflorescence. The period of flowering has extended from early July until August 12.

Aladdin Daylily. (Cover photograph) In the flowers, which have a spread of about 4 inches, there is a broad conspicuous mid-zone of garnet-brown in each petal and a lesser one in each sepal; the outer half of the face of the flower is golden cadmium with tinges of red-fulvous which are slightly stronger in the sepals. Thus the pattern is strongly banded but different in tones from both the *Mikado* and *Buckeye Daylilies*. The scapes rise to 45 inches and are rather short-branching with flowers somewhat clustered. The season of bloom is mostly in late June. The plant is nearly evergreen but suffers only slightly from winter injury.

Autumn Prince Daylily. The flowers are clear light yellow in color (a self-pattern) and of medium-small size. The season of flowering is in late summer and autumn (from early August on into early October). The scapes are stiffly erect, tall (to 42 inches), and much branched. The foliage is fully dormant in winter when the buds are submerged.

Baronet Daylily. A concentric and sharply contrasted two-toned pattern marks this flower; there is an orange throat outside of which both the sepals and petals are a sprightly fulvous red of the shade near Brazil red (Ridgeway). The petals are wide, semi-rounded, and recurving and the flower is full. The much branched scapes rise to a height of 28 inches and are scarcely taller than the foliage. The season of flowering is June.

Bertrand Farr Daylily. The flowers are of medium size and full with all petals and sepals gracefully recurved. The throat of the flower is pale orange outside of which the coloring is near grenadine pink (Ridgeway) or salmon red

(between numbers 13-2 and 13-3 of the R.H.S. charts) but with darker red coloring in the veins. The scapes are well branched but only about 30 inches tall. In well grown plants the flowers are numerous and somewhat massed at a low level in a way that attracts attention. The period of flowering is in July. The propagations of this plant under selection at the nurseries of the Farr company have been much admired by members of that firm and by various visitors. This seedling is one of numerous individuals obtained by cross-breeding the *Patricia* with the *Charmaine Daylily*.

Bicolor Daylily. (Fig. 10) Two colors with radial distribution enter into the pattern of the open flowers of this daylily. The sepals and throat and a stripe extending out along the midrib of each petal are yellowish orange; the petals outside of the throat and the stripe are of a pale fulvous red tinged with rose. The flower is full and somewhat cup-shaped with noticeably rounded petals. The scapes rise to about 40 inches and are well branched. The season of bloom has been chiefly in July and August.

Brunette Daylily. (Fig. 5) Of the selections named at the New York Botanical Garden this is the first which has a decidedly and general chocolate shade of coloring. A discarded seedling of our earlier selections, which was afterwards named *Brownie Daylily*, is somewhat of the same class but is much less strongly colored. The throat of the *Brunette Daylily* is yellowish orange; there is a large mid-zone of a shade near madder brown outside of which the blade is a lighter shade of tan-red or brownish red. The pattern is hence concentric and is three-toned and banded. The period of bloom is early, beginning about June 1. The flowers are medium-small (about 3½ inches in spread), medium-full, and widely open. The scapes are much branched and usually stand only from 24 to not more than 30 inches tall.

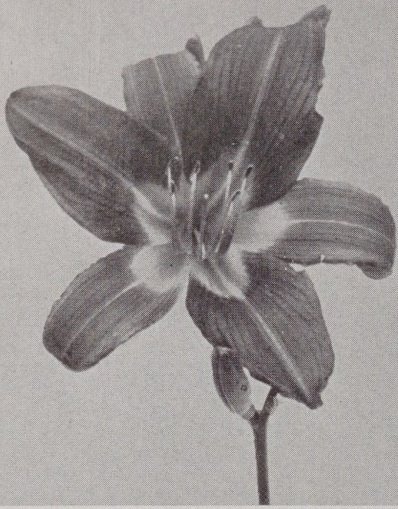
This plant is a complex hybrid with an ancestry that includes *H. flava*, *H. fulva* clone *Europa*, *H. aurantiaca*, and *H. Middenforffii*. Also in the ancestry are six different seedlings some of which are selections for early flowering, semi-dwarf stature, and dark flower coloring.

EIGHT OF THE NEW DAYLILIES

BEING INTRODUCED

THIS YEAR

1. *Sachem*, of a deep red approaching garnet-brown.
2. *Dominion*, rich red in three contrasting tones.
3. *Buckeye*, a June-blooming bicolored type.



1.

4. *Port*, an outstanding small red flower with greenish-orange throat.
5. *Brunette*, the first chocolate-colored daylily named at the Garden.
6. *Mignon*, the smallest of all, with pale yellow flowers.
7. *Monarch*, a distinctive flower of lemon yellow with sepals and petals contrasting in their shape.
8. *Triumph*, another of individual form, with rich orange coloring.



2.



3.



4.

Photographs by
Fleda Griffith

Flowers shown at
exactly half
natural size.



Buckeye Daylily. (Figs. 3 and 11) The color pattern in the flowers of this daylily is boldly banded with a broad mid-zone in the petals of garnet-brown which is in sharp contrast to the clear cadmium-yellow (which is a shade of orange) of both the throat and the outer part of the open flower. Also the color of the throat extends or radiates rather prominently along the midvein of each petal. There is only slight banded coloring in the sepals. The flowers are clustered in a manner that brings the flowers of the different scapes into a somewhat compact group at nearly the same level. The scapes reach a height of 30 inches. In winter the foliage is fully dormant. The plants flower chiefly in late June. The flower coloring resembles that of the *Mikado Daylily* but the season of flowering is earlier and the habit of growth is different. In the ancestral pedigree of this plant there are *H. flava*, *H. fulva* clone *Europa*, *H. aurantiaca*, and *H. Middendorffii*.

Dominion Daylily. (Fig. 2) This is an outstanding daylily for medium-large full flowers with rich red coloring in a concentric three-toned pattern. Outside of a throat that shades into orange the sepals and petals are garnet-brown with a darker mid-zone that approaches maroon in the petals. The foliage is semi-evergreen. The scapes rise to 40 inches. The main season of flowering has extended from June 21 until the middle of July but there has been a second period of less profuse and rather irregular bloom which has extended from mid-August until severe freezing temperatures in November.

Harlequin Daylily. The blades of the petals are rather uniformly red, of a shade near to carmine and to English red of Ridgeway, and to the vermilion of the Garden Dictionary. The throat and sepals are golden yellow except for a few red streaks in the sepals. Thus the pattern is a bicolor in two tones that are concentric in the petals. The flowers are medium-large (to about 6 inches in full spread) with petals rather long and recurving. The scapes are nearly 4 feet tall. Compared with the *Bicolor Daylily* the red coloring is darker and the shape of the flower is quite different. The plant has robust stature (about 40 inches) and the flowering is mostly in July, but may extend into August.

Hiawatha Daylily. (Fig. 9) The numer-

ous medium-small flowers ($3\frac{1}{2}$ inches in spread), of the branching, upstanding scapes are carried to a height of about 40 inches. Their color is almost uniformly a golden orange, of a shade between orange and cadmium-yellow (Ridgeway) and close to tangerine-orange (R.H.S.). At the New York Botanical Garden the climax in flowering for this daylily has been during the latter half of July. The habit of growth is much like that of *H. multiflora* and the group of the *Summer Multiflora Hybrids*, but this plant is taller and the flowers are somewhat larger, and the period of blooming is earlier than for *H. multiflora*.

Mignon Daylily. (Fig. 6) This plant is rated as the best of the present selections for small yellow flowers in a plant of rather tall stature and a long period of flowering. The precise shade of coloring is very nearly lemon chrome (Ridgeway) with a slight change toward green in the base of the throat. There is some brownish red on the flower buds which persists on the sepals of the opened flowers. Many of the flowers have a spread of only 1 to $1\frac{1}{2}$ inches, and seldom have flowers measured 2 inches. They are full and spreading, and normally open about dusk and continue widely open and in good condition throughout the following day until sunset or even after dark, depending on the weather. On many days there are two sets of flowers open for a time in the evening. The scapes are much branched and slender, but stiffly upstanding to a height of 40 inches. The period of bloom for well developed plants at the New York Botanical Garden has continued from mid-June until in August. In the group of ramets of this clone in the propagations at the Farr Nursery the flowering has continued throughout August and on into early September. The foliage is dormant in winter and the plant is fully hardy.

Monarch Daylily. (Fig. 7) The flowers of this daylily have individual character and special charm in their form. They are full, and while the sepals are recurved, the petals are only semi-spreading and noticeably incurved near their tips. The general coloring is close to light cadmium (Ridgeway) or the lemon yellow 4 of the R.H.S. chart, and there is a faint halo of fulvous in the region of the mid-zone. The scapes are stiffly upright

to a height of 3 feet and are much branched. The plants of this clone flower during July.

Port Daylily. (Fig. 4) This is an outstanding red-flowered daylily with sturdy much branched scapes usually from 2 to not more than 3 feet tall. The flowers are medium small (about 3 inches in spread), full, and of a rich sprightly red that is near the Brazil-red of Ridgeway. The color is slightly darker in the mid-zone, which extends somewhat into a shallow throat of greenish orange. The foliage is coarse and rather upstanding with the tips extending into the level of the flowers. The period of bloom is throughout July. The flowers are widely open during the hours of daylight but close soon after dark. This plant was admired by Mrs. J. Norman Henry who suggested that it be named **Port Daylily** in memory of her youngest son, Frederick Porteous Henry.

Red Bird Daylily. The dominant flower coloring of this seedling approaches vermilion-red with a somewhat deeper shade in the mid-zone. Several selections of this particular class for color have been under evaluation for several years. This is the first of these that is now ready for introduction. The foliage is evergreen; the scapes stand about 3 feet tall; and the season of flowering is in July. In the ancestry of this plant are *H. flava*, *H. aurantiaca*, *H. fulva* clone **Europa**, and three different wild plants of *H. fulva* including the **Rosalind Daylily**.

Sachem Daylily. (Fig. 1) This plant has tall (40 inches), much branched scapes. The flower buds are reddish brown; the open flowers are of medium size (about 4½ inches spread), full, and the color in the face outside of the throat is nearly uniformly dark red of a shade between garnet-brown and maroon of Ridgeway and near the carmine of the Garden Dictionary. The throat of yellowish orange is in sharp contrast to the outer zone of red. Thus the pattern is concentric and two-toned. The red coloring is near that of the **Vulcan Daylily** but without a midband; the shape of the flower and the habit of growth are also quite different. The flowers hold color and form throughout the day even in hot weather, and they close after the sun sets. The period of bloom is chiefly in July.

Symphony Daylily. The foliage of this plant is fully dormant during the winter and the buds are submerged. The scapes rise to a height of 44 inches and are well branched. The flowers are medium-sized (about 4½ inches), medium-full and widely spreading. They are somewhat bicolored: that is, the sepals are almost yellow; the petals are greenish yellow in the throat, rose-tinted in the blade, and there is a somewhat narrow but noticeable mid-band of darker red. The various colors are delicately blended. The flowers open in the evening and remain in excellent condition until about dark the following day. The period of flowering is from the middle of June until the middle of July. The general character of the flower coloring is similar to that of the **Linda Daylily**; but the coloring is more delicate, and also the scapes are taller and the season of flowering is earlier.

Triumph Daylily. (Fig. 8) The form of the flowers of this daylily is somewhat special and individual. The petals are broad, strongly recurved, and often somewhat folded back along the edges ("pinched"), but the sepals stand semierect. The flower is medium-large (5 inches in spread), and the color is a rich orange with a slight fulvous halo in the region of the mid-zone. The flowers are widely open and in good condition throughout the day but they close promptly at dusk. The coarse scapes rise to 40 inches and are well branched. The season of bloom is July.

Yeldrin Daylily. The flowers are rather small and full with a spread of about 3 inches; the color in the entire face is very uniformly yellowish orange, close to the empire yellow of Ridgeway; the buds and backs of the sepals are noticeably brown-red. The scapes are much branched and rise to a height of 40 inches. The season of bloom has been in late July until mid-August.

Zouave Daylily. At the New York Botanical Garden this daylily has been in bloom throughout June, with a second period of considerable bloom in September. The flowers have a spread of about 3½ inches; the color of the petals is rich fulvous red with a somewhat darker mid-zone; the sepals have less color, and hence the general color-pattern is somewhat bicolor. The scapes are much branched and they rise to a height of 40 inches.

Color Patterns In Daylilies

By A. B. Stout

THE NUMBER of the distinctive pigments, their quality or nature, and their distribution in the face of the open flower are the main features of significance in defining the classes of color patterns in the flowers of daylilies.

There are two principal classes of pigments in the tissues of the flowers of daylilies: (1) the plastid pigments which give the green, the yellow and the orange color effects and (2) the sap pigments or anthocyanins which are some shade of red. The plastid pigments are chiefly sub-epidermal and hence mostly confined to the inner tissues; the sap colors are most strongly developed in the outer or epidermal layer of cells. Thus the effect in any area of the face of the flower may involve only one of the two kinds of pigments or be the combined effect of one over the other. There are many gradations in color values from green to yellow and orange and in the shades or tones of yellow and of orange. For the red-colored pigment there is also much diversity in shade and intensity.

For the following outline of color patterns there has been consideration of the species of *Hemerocallis*, the large number of named horticultural clones, and the numerous hybrid seedlings that have been grown at the New York Botanical Garden.

When there is more than one distinct shade of pigmentation the tendency is for the distribution to be either concentric or radial. One of these distributions may dominate in a pattern but both may be strongly in evidence in the same flower.

At the present time the writer does not wish to apply single names to each and every one of the patterns noted in the following scheme. Here the descriptive terms which apply to a pattern are the several names given for the main class, the sub-divisions, the individual pattern and the sub-pattern. For example, the pattern of Fig. 7 is concentric, two-toned, banded, and radiate. There are, of course, intergradations between various of the 15 patterns here described and illustrated.

I. SELF-PATTERN. The entire face of the flower is of one color.

One-toned; Fig. 1. The one-toned pattern is usually some shade of yellow or orange and hence the pigments are plastid in origin. Frequently the extreme throat is somewhat green, but when this becomes distinct in contrast to either yellow or orange in the outer part of the perianth the pattern becomes concentric.

II. CONCENTRIC PATTERNS may be arranged into four groups and these further divided into at least 9 different pattern types or individual patterns.

A. *Semi two-toned.* The distribution of one pigment or the combination of two pigments is such that there is a gradual but rather uniformly concentric change in the intensity of one dominant color.

Centric; Fig. 2. In this the shade of coloring is most intense in the extreme throat of the flower. Certain seedlings have this pattern in a coloring dominated by the sap pigments. This particular pattern is new and unusual for *Hemerocallis*.

Distal; Fig. 3. In this pattern the shade of color becomes more intense toward



(Over)

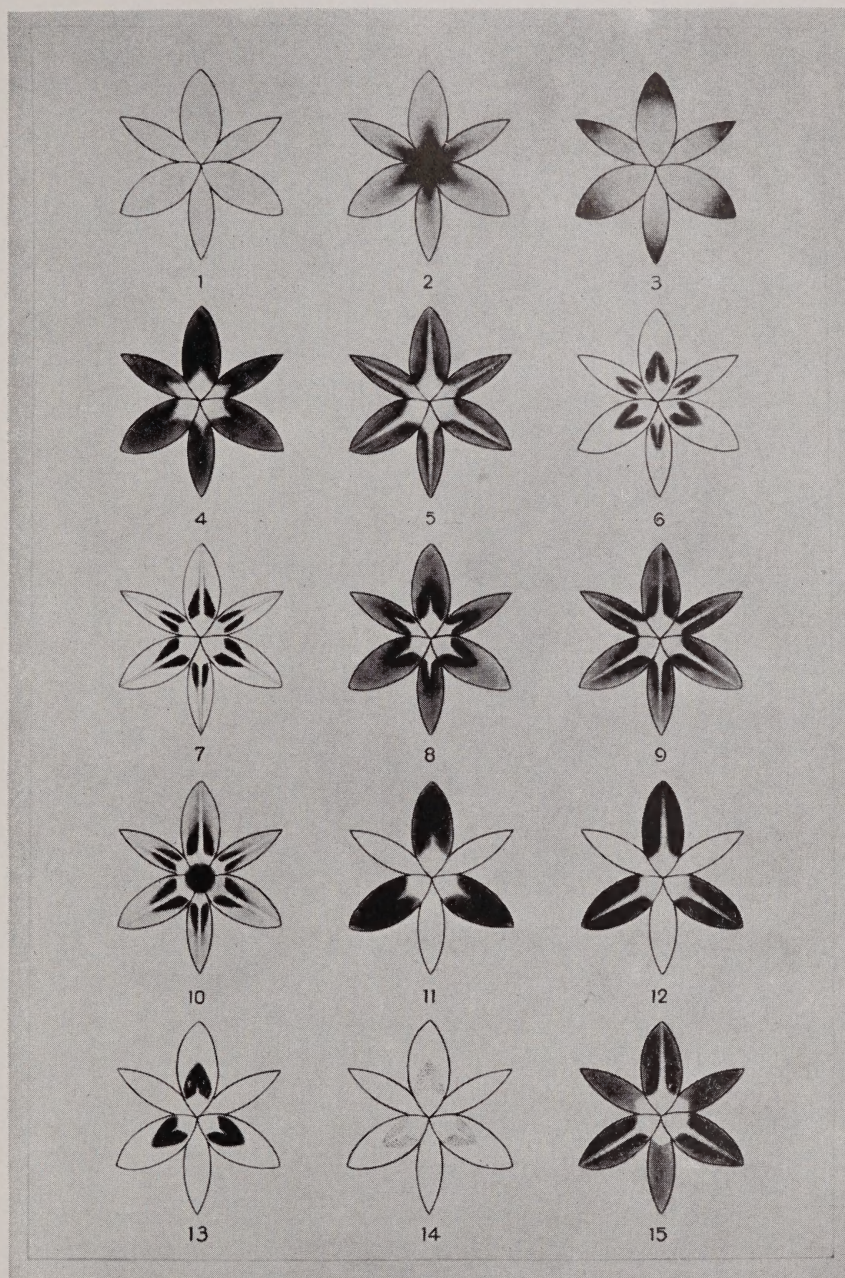


Diagram by Eleanor Clarke, through the co-operation of the W.P.A.
 Illustration showing the distribution of color and the principal patterns in
 flowers of *Hemerocallis*.

the periphery of the open flower. Several selections among seedlings of hybrid origin have this pattern.

B. *Two-toned patterns* have, usually, a throat of one color outside of which both sepals and petals are quite alike.

Distal; Fig. 4. For this the stronger or more noticeable pigment is at the outer portion of the flower, and often this is the red pigment which fails to appear elsewhere.

Distal and radiate; Fig. 5. This pattern differs from that of Fig. 4 in that the color of the throat extends outward along the midrib of petals and sepals.

Banded; Fig. 6. In the two-toned banded pattern there is a mid-zone in sepals and petals of more intense pigmentation, and usually this is a sap color, with the rest of the flower, both the throat and the outer part, of nearly the same coloring.

Banded and radiate; Fig. 7. The pattern last noted becomes radiate when the color of the throat extends through the band in each of the sepals and petals.

C. *Three-toned patterns*.

Banded; Fig. 8. In the fulvous and red-colored daylilies there is frequently a throat of plastid pigment outside of which there is the sap pigment which has greater intensity in the mid-zone.

Several unusual distributions of color have appeared which suggest that other somewhat distinctive patterns besides those here mentioned may appear in the horticultural daylilies of the future. Fig. 14 shows a scattered distribution in small spots of red pigment in the region of the mid-zone of the petals. The spots may be fewer and more widely distributed than is shown in this figure. Numerous seedlings of certain progenies have this character; and it is of interest to note that these plants are hybrids of parents which had no red coloration in the face of their flowers. If the spots of such a pattern should become much larger but still separated, a truly spotted pattern would result.

In various seedlings the red pigment in the blades of petals is much broken into irregular areas to give a flecked pattern. In several of the seedlings already obtained there is a rather narrow but noticeable band or border of lighter color at the edge of the flowers. The *Saturn Daylily* has the marginal banded feature to some degree. In certain seedlings the darker coloring in the outer edge of the face of the flower tends to break into irregularities that suggest a picoté pattern. In other seedlings the red pigments are noticeably broken into streaks. As these and other new patterns develop they will no doubt be noted and described, especially when they occur in newly named horticultural clones.

Radiate; Fig. 9. Frequently in the two-toned and three-toned concentric patterns the throat color extends outward along the midrib. When this becomes rather conspicuous the pattern appears as shown in Fig. 9.

D. *Four-toned patterns* have one more zone of distinctive tone than do three-toned patterns (Fig. 8). Usually the extreme throat is green, immediately outside of which there is yellow or orange, then there is a mid-zone of dark red and a periphery of a lighter tone. The pattern may be *Concentric*, as here described, or it may also have a *Radiate* feature, when it will appear as in Fig. 10.

III. **RADIAL PATTERNS.** In these the sepals and petals are different in some noticeable feature of coloring, and this condition dominates. The stronger and more intense coloring is usually in the petals. Hence the pattern is bicolored. The principal variations in design according to the coloring of the petals are: *Distal*, Fig. 11; *Banded*, Figs. 13 and 14; and *Radiate*, Fig. 12.

IV. **COMBINATION PATTERNS.** The concentric and the radiate distributions of color may both be present and conspicuous in flowers, examples of which are seen in Figs. 5, 7, 9, 10, and 15.